MIAMI - WALT DISNEY WORLD

RAILROAD PASSENGER TRAIN STUDY

September 1972

State of Florida

Florida Department of Transportation

Division of Mass Transit Operations

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INTRODUCTION

The purpose of this report is to develop the economics of providing additional Railroad Passenger Service in the Orlando-Miami Intercity Transportation Corridor.

Florida residential travel as well as domestic and foreign tourist travel has shown a marked increase in this corridor since the opening of Walt Disney World in October, 1971. The transportation demand is currently served by the private automobile, bus and air modes. The existing rail service in the corridor consists of one round trip per day between Orlando and Miami and is provided by a long distance oriented train with end terminals in Chicago, New York and Miami.

The service contemplated in this report consists of a shuttle train service between Orlando and Miami oriented to the residents of the corridor and the tourist flow between the Miami-Palm Beach and Walt Disney World areas. These trains could consist of either conventional equipment, TurboTrains or the self-propelled multiple unit trains under development. The service provided must be frequent, of high quality, and at a competitive cost and competitive elapsed time factor with the other modes in the corridor.

The Metroliner rail service in the North East Corridor between New York City and Washington, D.C. is the only profitable rail service in the United States today. The possibility exists that the corridor between Orlando and Miami can be developed into a second viable rail service area in the United States. A modern rail service would provide a choice other than air and bus to residents and tourists who do not desire to drive their private automobile.

It also would provide to a minor degree relief to the congestion of highway and air facilities.

SCOPE OF REPORT

There are only two general classes of rail equipment available in the near term with which to provide the contemplated service. They are:

1. Conventional diesel electric locomotives and passenger cars.
2. The United Aircraft Corporation TurboTrains

A third class, that of self propelled (gas turbine) multiple unit cars, is under development and will be available in late 1974.

Fare structure, comfort, frequency and reliability play a major role in determining the usage made of the service, however the major consideration in competion with air and bus service is the elapsed time or average speed between the terminal cities. Highway traffic on the Florida Turnpike is capable of averaging 60 mph between Miami and Walt Disney World thus providing a portal to protal service of four (4) hours. Comparable railroad time is five (5) hours twenty-five (25) minutes or a 49.66 mph average speed. It is therefore, evident that the railroad speed must be increased. This can only be done by reducing slow orders through municipalities, eliminating hand switching at Auburndale, keeping station dwell time to a minimum, and increasing the maximum schedule speed.

This report will investigate areas where this can be accomplished and the related costs of so doing.

The existing track and signal system is designed for and operated at a maximum scheduled speed of 79 mph, to operate at 100 mph, 120 mph or 150 mph will require expenditures of capital money for track and signal upgrading.

DESCRIPTION OF THE SEABOARD COAST LINE RAILROAD-ORLANDO-MIAMI

Route

Figure 1, page 4 illustrates the railroad route between Orlando and Miami. Scheduled three minute stops will be made at Auburndale, West Palm Beach and Fort Lauderdale. The system is a single track automatic signaled railroad with passing sidings operated by centralized traffic control.

Curvature

Figure 2, page 5 indicates the mile post pluses of the major cities on the route. The ruling grade northbound is 1.0 percent and is located between MP 823.09 and MP 823.34. The ruling grade southbound is 1.18 percent and is located between MP 827.41 and MP 827.76. Neither grade is critical to operation of the contemplated 4 or 5 car train at high speed.

A list of the degree of track curvature and the existing superelevation with the speed capability of conventional and TurboTrain equipment is attached as Exhibit I in the Appendix. The TurboTrain suspension system permits approximately 40 percent higher speeds for a given degree of curvature and bank.

Speed Restrictions

A list of slow orders due to municipal ordinances and operating requirements is shown as Figure 3, page 6

Signals

Train Operation is controlled by a three aspect, two block automatic signal system. The system is not equipped with automatic train stop or control equipment. Centralized traffic control is affected from control points in Tampa and Jacksonville.

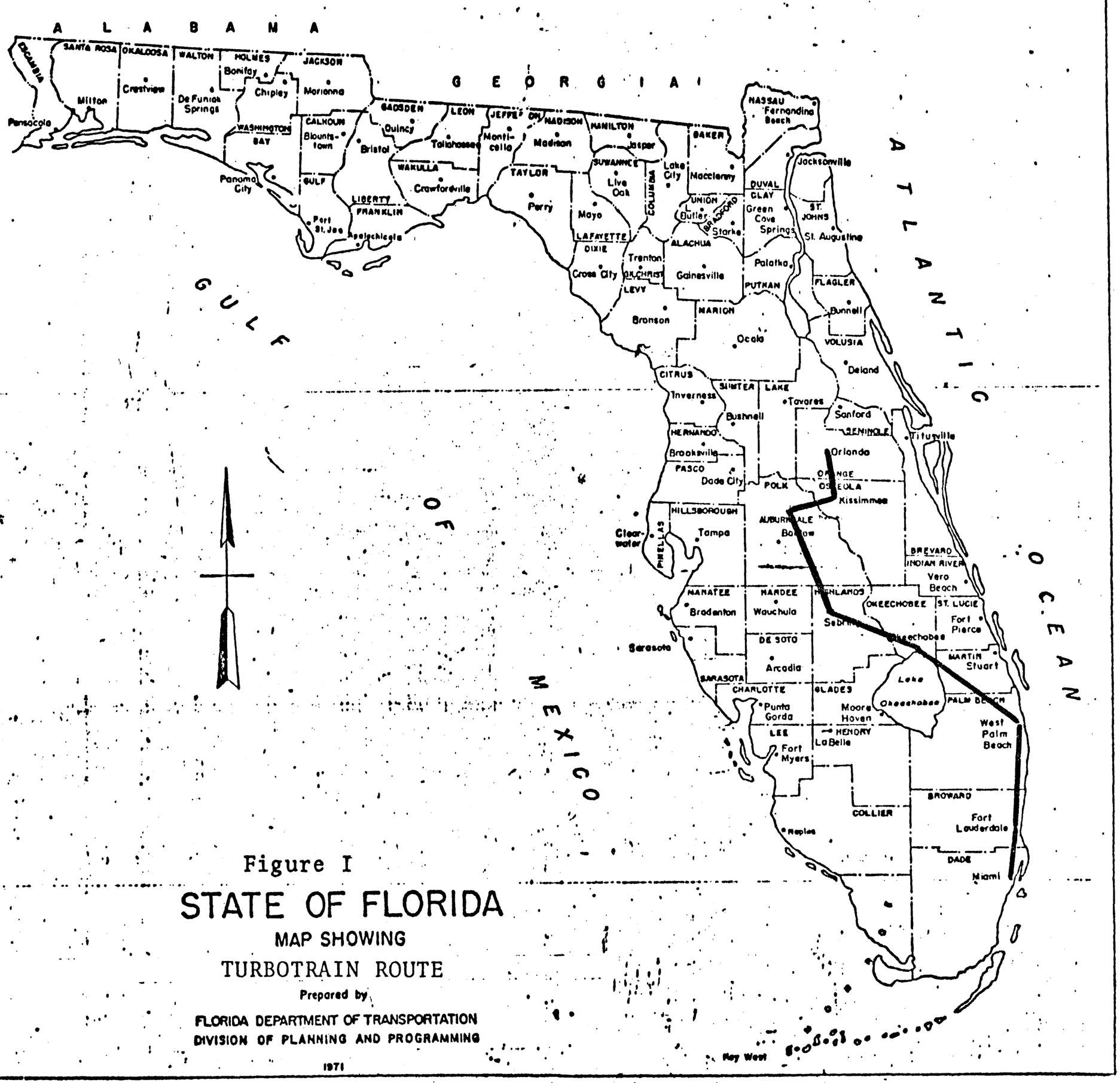


Figure I

STATE OF FLORIDA

MAP SHOWING

TURBOTRAIN ROUTE

Prepared by

FLORIDA DEPARTMENT OF TRANSPORTATION
DIVISION OF PLANNING AND PROGRAMMING

1971

FIGURE 2

CITY	MILE POST
ORLANDO	791.5
KISSIMMEE	808.1
DAVENPORT	825.6
HAINES CITY	829.5
AUBURNDALE	840.4
	820.5
WINTER HAVEN	826.2
WEST LAKE WALES	835.8
AVON PARK	858.2
SEBRING	867.3
OKEECHOBEE	908.7
INDIANTOWN	936.3
W.PALM BEACH	969.9
LAKEWORTH	976.5
BOYNTON BEACH	983.0
DELRAY BEACH	987.5
DEARFIELD BEACH	998.3
POMPANO BEACH	1003.9
FT. LAUDERDALE	1012.3
HOLLYWOOD	1019.7
OPA-LOCKA	1030.0
HILEAH	1036.3
MIAMI	1040.0

FIGURE 3

MUNICIPAL SPEED RESTRICTIONS

MILE POST LIMITS	CITY	SPEED MPH	MILES	
787.4-792.3	ORLANDO	25	0.69	
793.6-795.5	PINE CASTLE	40	2.06	
807.4-808.8	KISSIMMEE	~~12~~ 25	1.53	
824.5-825.3	DAVENPORT	50	0.81	
828.7-830.4	HAINES CITY	40	1.12	
835.6-836.3	LAKE ALFRED	50	0.74	
840.2-840.7	AUBURNDALE	50	0.44	
857.6-860.0	AVON PARK	30	2.41	
865.9-867.5	SEBRING	35	2.05	
908.0-910.0	OKEECHOBEE	55	2.00	
937.2-937.3	INDIANTOWN	45	0.20	ST. LUCIE BRIDGE OPERATION
966.6-967.1	MAGNOLIA PARK	30	0.49	
967.1-974.6	W. PALM BEACH	30-40	2.88	
			17.38	

Exhibit II in the appendix outlines the physical characteristics of the existing signal system and indicates the signal locations requiring a fourth aspect for operation at the designated maximum speed. This data was furnished by the Office of Superintendent Communications and Signals of the Seaboard Coast Line Railroad Company.

Track

The main line track structure on the route is in good condition for scheduled speeds of 79 mph. It is not however, recommended that speeds in excess of 120 mph be planned for the jointed rail existing in track. The continuous welded rail in track is capable of sustaining 150 mph speeds, however, speeds in excess of 79 mph will require a proportionate higher degree of maintenance.

A table indicating M.P. location, weight of rail and date laid in track follows:

MILE POST LIMITS	RAIL WEIGHT PER YARD	CONVENTIONAL JOINTED OR CONTINUOUS WELDED	DATE LAID
790.0-841.0	115# RE	CJ	1950
821.3-835.5	112# RE	CJ	- -
835.5-836.0	115# RE	CJ	1950
836.0-877.7	112# RE	CJ	1947
877.7-893.7	132# RE	CW	1970
893.7-911.4	132# RE	CW	1971
911.4-912.3	112# RE	CJ	1948
912.3-919.6	132# RE	CW	1971
919.6-929.0	132# RE	CW	1969
929.0-933.0	132# RE	CW	1971
933.0-944.60	132# RE	CW	1972
944.6-1014.73	115# RE	CJ	1947-51
1014.73-1016.22	115# RE	CW	1964
1016.22-1034.21	115# RE	CJ	1952
1034.21-1040.28	100# RA	CJ	- -

Grade Crossings

There are 157 public and 32 private grade crossings in the 198.7 miles between Orlando Station and West Palm Beach Station. These crossings are protected as follows:

Flashing Lights and Gates	18
Flashing Lights	45
Standard Cross Bucks	92
Continuous Blinking Lights and Cross Bucks	1
Cross Buck and Traffic Signals	1
Private Crossing with Cross Bucks	29
Private Crossing with Flashing Lights	2
Private Crossing with Flagman	1
	189

Seventy-four of these crossings are within municipal limits with railroad slow orders imposed by city ordinances as follows:

City	Speed Limit mph	Miles of Slow Orders	Number of Grade Crossings	Type of Crossing Protection: Bucks	Lights	Flashing Lights & Gates	Estimated Cost to Equip w/ Flashing Lights & Gates
Orlando	25	0.65	3		3		$ 21,000
Taft	40	2.06	7	4	3		121,000
Kissimmee	12	1.53	14	13		1	325,000
Davenport	50	0.81	6	5	1		132,000
Haines City	40	1.12	5	5			125,000
Lake Alfred	50	0.74	3	1	2		39,000
Auburndale	50	0.44	5	1	4		53,000
Avon Park	30	2.41	5	3	2		89,000
Sebring	35	2.05	5	4	1		107,000
Okeechobee	55	2.00	7	2		5	50,000
Indiantown	45	0.20	5	3	2		89,000
Magnolia Park	30	0.49	2		1	1	7,000
West Palm Bch	40/30	2.88	7	2	2	3	64,000
		17.38	74	43	21	10	$1,222,000

The 17.38 miles of municipal slow orders represent 8.7% of the total mileage between Orlando and West Palm Beach. Discounting deceleration and acceleration time, these slow orders at their designated speeds, required 33 minutes to traverse, at a schedule speed of 79 mph they require 13 minutes.

Level of Service

Cost data will be developed for use of two each, conventional or TurboTrains making (a) two round trips daily, (b) three round trips daily. One way mileage-Orlando to Miami is 269 miles. The service will operate 6 days per week or 312 days per year.

Train mileage (a) 2 round trips

(269) (4) (312) = 335,712 train mi/yr

(b) 3 round trips

(269) (6) (312) = 503,568 train mi/yr

Crew Costs

For each of the two levels of service proposed railroad crew requirements will be the same for TurboTrains as for conventional equipment. Existing labor agreements require an engineman, fireman, conductor, brakeman and flagman. The route encompasses two seniority districts, that of the Tampa Division between Orlando and Auburndale, and the Jacksonville Division between Auburndale and Miami. There is no reason to speculate that changes in crew consists or other special rules can be agreed upon to implement this service with less crew members, therefore a full crew is provided for in the cost figures. The two round trips per day schedule will require two Tampa Division and two Jacksonville Division crews. The three round trip per day schedule requires three crews from each division.

In 1971 Seaboard Coast Line's passenger crew costs averaged $1.24 per train mile. To arrive at a 1973 train mile cost we add 20% for a negotiated wage increase and 6% for inflation, or $1.56 per train mile.

Train Attendant Costs

TurboTrain buffeteria and lounge bar configuration will require two attendants @ an estimated cost of $112,320 per year for three round trips and $74,880 for two round trips. Conventional train configuration will require the use of one train attendant in the buffet-lounge at a cost of $56,160 per year for three round trips and $37,440 for two round trips.

If Seaboard Coast Line regulations permit these employees could be AMTRAK hostesses.

Station Labor Costs

The following table illustrates the hours the stations are manned for sale of tickets under the existing passenger operation and the hours required under the proposed two trip and three trip increase in service.

Station	Current AMTRAK	Two Round Trip Schedule Requirement	Three Round Trip Schedule Requirement
Miami	8 hrs.	12 hrs.	16 hrs.
Fort Lauderdale	8 hrs.	11 hrs.	15 hrs.
West Palm Beach	5 hrs.	9 hrs.	14 hrs.
Auburndale	not open	11 hrs.	16 hrs.
Kissimmee	not open	11 hrs.	16 hrs.
Orlando	11 hrs.	11 hrs.	16 hrs.

This indicates that each of the listed stations will have to go from a basic one trick per day operation to a two trick per day operation six days per week. This increase amounts to 312 hours per week. Assuming an hourly rate of $4.00 per hour this equals $64,896 additional per year for station ticket attendants.

Train Operation and Schedules

A market survey* indicates a potential of from 175 to 200 passengers per train with a three round trip per day schedule using two train sets. Train consists for a two or three round trip schedule would therefore necessarily have to be as follows:

Conventional

3 ea 72 passenger rotating reclining seat coaches
1 ea 30 passenger combination lounge/buffet car
1 ea diesel electric road locomotive capable of operation in either direction without turning and geared for 100 mph speed
Capacity 246 passengers

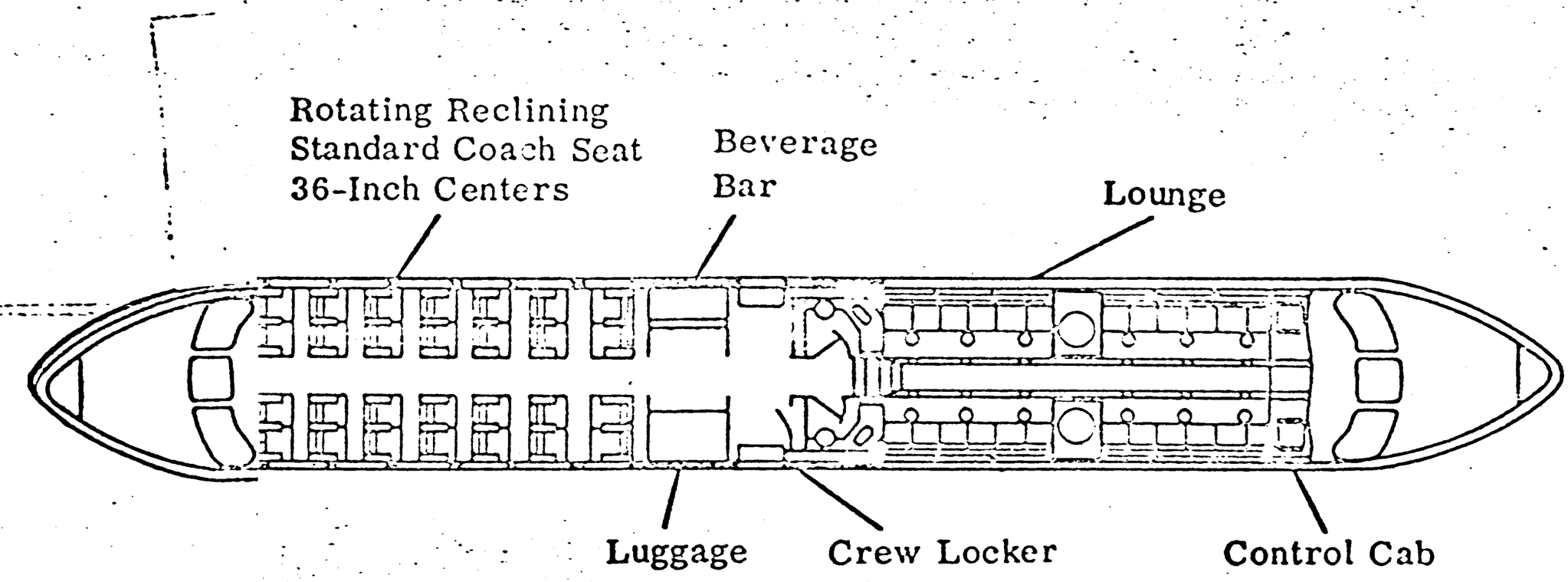
TurboTrain

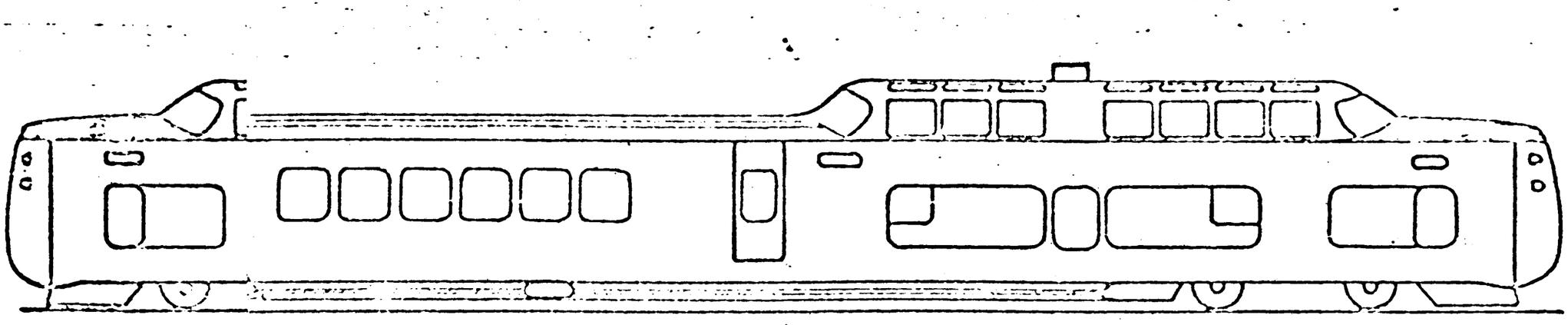
1 ea 56 passenger rotating reclining seat intermediate car
1 ea 38 passenger buffet-coach intermediate car
2 ea 52 passenger coach/lounge power cars
Capacity 198 passengers

The proposed TurboTrain configuration is shown in Figure 4, page 12. The TurboTrain consist is limited by the availability of two each four car trains as outlined above.

Standby equipment must be available in case of major TurboTrain breakdown. Conventional rail equipment would be used for this purpose. A minimum requirement would be one diesel electric locomotive and two each 72 passenger coaches. Preferably this equipment would come from an AMTRAK pool maintained in the Miami area in support of the proposed service and Chicago-New York-Miami trains.

*Miami-Orlando Intercity Rail Operation Feasibility Study by Carl. R. Englund, Jr., July, 1972.


Rotating Reclining
Standard Coach Seat
36-Inch Centers
Beverage
Bar
Lounge
Luggage
Crew Locker
Control Cab



Sikorsky A

Representative schedules for conventional trains are shown in Figure 5, page 14 and for TurboTrains in Figure 6, page 15. The schedules shown are for a two and three round trips per day level of service and are used in calculating operating costs and train revenues. They are hypothetical and subject to a time analysis based on the maximum speeds attainable on the route with various degrees of capital expenditures for grade crossing, track, and signal improvements. The schedules as shown are predicated on the assumption that the present hand operated connection at Auburndale will be remote controlled thus saving an estimated 17 minutes in running time.

Train Maintenance

A TurboTrain maintenance and repair shop will be established at Sanford. Under the schedule where each train makes 1-1/2 round trips per day alternate day maintenance would be scheduled at Sanford.

A United Aircraft maintenance team, consisting of 14 technicians would train and support a Seaboard Coast Line work force for a period of at least one year. Seaboard personnel would also be trained by United Aircraft at its Fields Point, Rhode Island maintenance facility for 90 days before delivery of the trains.

It will be necessary that a $750,000 spare part inventory be purchased and available for repairs upon start of the operation.

Conventional trains would be maintained at the existing Hialeah Car Shop facility by Seaboard Coast Line

FIGURE 5

CONVENTIONAL TRAINS

2 ROUND TRIPS PER DAY -- 2 TRAINS

Northbound - Read Down			Southbound - Read Up	
8:00 a.m.	3:00 p.m.	Miami	12:42 p.m.	6:42 p.m.
8:38 a.m.	3:38 p.m.	Ft. Lauderdale	12:04 p.m.	6:04 p.m.
9:21 a.m.	4:21 p.m.	West Palm Beach	11:16 a.m.	5:16 p.m.
11:32 a.m.	6:32 p.m.	Auburndale	9:00 a.m.	3:00 p.m.
12:07 p.m.	7:07 p.m.	Kissimmee	8:25 a.m.	2:25 p.m.
12:32 p.m.	7:32 p.m.	Orlando	8:00 a.m.	2:00 p.m.

3 ROUND TRIPS PER DAY -- 2 TRAINS

Northbound - Read Down				Southbound - Read Up		
7:30 a.	1:00 p.	7:30 p.	Miami	11:42 a.	6:12 p.	11:42 p.
8:08 a.	1:30 p.	8:00 p.	Ft. Lauderdale	11:04 a.	5:34 p.	11:04 p.
8:51 a.	2:21 p.	8:51 p.	West Palm Beach	10:16 a.	4:46 p.	10:16 p.
11:02 a.	4:32 p.	11:02 p.	Auburndale	8:00 a.	2:30 p.	8:00 p.
11:37 p.	5:07 p.	11:37 p.	Kissimmee	7:25 a.	1:55 p.	7:25 p.
12:02 p.	5:32 p.	12:02 a.	Orlando	7:00 a.	1:30 p.	7:00 p.

FIGURE 6

TURBOTRAINS

2 ROUND TRIPS PER DAY -- 2 TRAINS

Northbound - Read Down			Southbound - Read Up	
8:00 a.m.	3:00 p.m.	Miami	12:15 p.m.	7:15 p.m.
8:35 a.m.	3:35 p.m.	Ft. Lauderdale	11:40 a.m.	6:40 p.m.
9:16 a.m.	4:16 p.m.	West Palm Beach	10:54 a.m.	5:54 p.m.
11:11 a.m.	6:11 p.m.	Auburndale	8:54 a.m.	3:54 p.m.
11:42 a.m.	6:42 p.m.	Kissimmee	8:23 a.m.	3:23 p.m.
12:05 p.m.	7:05 p.m.	Orlando	8:00 a.m.	3:00 p.m.

3 ROUND TRIPS PER DAY -- 2 TRAINS

Northbound - Read Down				Southbound - Read Up		
8:00 a.	2:00 p.	7:30 p.	Miami	12:15 p.	6:15 p.	11:45 p.
8:33 a.	2:35 p.	8:05 p.	Ft. Lauderdale	11:40 a.	5:40 p.	11:10 p.
9:16 a.	3:16 p.	8:46 p.	West Palm Beach	10:54 a.	4:54 p.	10:24 p.
11:11 a.	5:11 p.	10:41 p.	Auburndale	8:54 a.	2:54 p.	8:24 p.
11:42 a.	5:42 p.	11:12 p.	Kissimmee	8:23 a.	2:23 p.	7:53 p.
12:05 p.	6:05 p.	11:35 p.	Orlando	8:00 a.	2:00 p.	7:30 p.

Train Operating Cost

personnel under the project or AMTRAK contract. Accurate data on which to base railroad passenger train per mile operating costs are very difficult to substantiate due to its general lack of availability and the wide variance of maintenance and operating condition and rules under which the trains are required to be operated. The data presented here is based on that made available by the Seaboard Coast Line Railroad, the National Railroad Passenger Corporation, and as pertains to TurboTrains, United Aircraft Corporation.

TurboTrains (per train mile)	Crew Cost	$1.56	
	Equipment Maintenance	6.03	(Does not include lease cost.)
	Fuel/Supplies	0.35	
	Cleaning and Servicing	0.50	
		$8.44	
Conventional Train (per train mile)	Crew Cost	$1.56	$1.56
	Locomotive	1.50	1.50
	Fuel/Supplies	0.75*	0.80**
	Cars	2.03*	2.55**
		$5.84*	$6.41**

*Four cars
**Five cars

In addition to the actual train mile operating costs overhead costs are estimated by AMTRAK, as follows for a one year period:

TurboTrains

1. Food and beverage cost - 60% of revenue per passenger.
2. Railroad overhead from taxes, assumption of liability, administrative and other non-computed available costs - 8.5% of the total operating expens
3. AMTRAK overhead - 2% of the total operating expense.

Conventional Trains

The same as TurboTrains except railroad overhead rises to 13.35% of the total operating expense.

Bus Connection Costs

Kissimmee will become the Walt Disney World station for transfer from rail to bus or rental automobile. Bus service is estimated to cost $1.00 per bus mile. On this basis the bus connection service between Walt Disney World is estimated to cost:

Four Train Meets

(4) (33) (6) (52) = 41,184 mile/bus
(41,184) ($1.00) (3 buses) = $123,552
(41,184) ($1.00) (4 buses) = $164,736

Six Train Meets

(6) (33) (6) (52) = 61,776 mile/bus
(61,776) ($1.00) (3 buses) = $185,328
(61,776) ($1.00) (4 buses) = $247,164

Revenues would be at a 50 cent fare one way.

TurboTrain

(4) (200) (0.50) (6) (52) = $124,800
(6) (175) (0.50) (6) (52) = $163,800

Conventional

(4) (150) (0.50) (6) (52) = $ 93,600
(6) (125) (0.50) (6) (52) = $117,000

The bus connection is essential to the train service and any deficit operation will have to be subsidized as part of the overall train operation. From a marketing standpoint it would be desirable to include the bus fare as part of a trip ticket to and from Walt Disney World.

Table I page 19 outlines the estimated yearly operating costs and revenue projections for the levels of service contemplated.

Capital Cost

The capital investment costs can be broken down into two categories (1) that necessary to provide the equipment, stations, and services needed regardless of the level of speed of trains and (2) that necessary to obtain a given level of speed. Category (2) is a function of the track conditions, grade crossing protection, and signal and automatic train control protection necessary to sustain the given speed level. For estimation of capital costs it is therefore necessary to set a given maximum speed level over the various portions of the railroad. Consideration was given to 150 mph maximum, however this speed is considered possible from a signal and track condition standpoint only between Sebring and West Palm Beach. Further, United Aircraft does not recommend a sustained operating speed over 120 mph for TurboTrains due to equipment maintenance problems. Experience in the Northeast Corridor indicates that the detail in track maintenance necessary for 150 mph on tracks used jointly by heavy freight trains is prohibitively expensive. Difficulty has also been experienced with Metroliners sucking doors off refrigerator and box cars at speeds over 120 mph dependent on track centers.

TABLE I OPERATING COSTS PER YEAR

ITEM	2 Round Trips Daily-6 Days/Wk 335,712 Train Miles Per Year		3 Round Trips Daily-6 Days/Wk 503,568 Train Miles Per Year	
	TURBOTRAINS	CONVENTIONAL	TURBOTRAINS	CONVENTIONAL
1. TRAIN OPERATION	2,833,409	2,151,914	4,250,113	2,940,837
2. TRAIN ATTENDANTS	74,880	37,440	112,320	56,160
3. TICKET PERSONNEL	64,896	64,896	64,896	64,896
4. FOOD & BEVERAGE	149,760	112,320	196,560	140,400
SUB TOTAL	3,123,035	2,366,570	4,623,889	3,202,293
5. AMTRAK OVERHEAD 2%	62,461	47,331	92,478	64,046
6. SEABOARD COAST LINE OVERHEAD	265,458 - 8.5%	201,158 - 13.35%	393,030 - 8.5%	272,195 - 13.35%
7. BUS CONNECTIONS	164,736	123,552	247,164	185,328
8. EQUIPMENT LEASE	1,200,000	87,500	1,200,000	87,500
TOTAL	4,815,690	2,826,111	6,556,561	3,811,362
REVENUE				
4 CENTS/PASSENGER MILE	2,685,696 (200)	2,014,272 (150)	3,524,976 (175)	2,517,840 (125)
FOOD & BEVERAGE @ $1/PERSON	249,600	187,200	327,600	234,000
BUS TO WDW @ $.50 ONE WAY	124,800	93,600	163,800	117,000
	3,060,096	2,295,072	4,016,376	2,868,840
NET (LOSS)	(1,755,594)	(531,039)	(2,540,185)	(942,522)
2/3 STATE PARTICIPATION	(1,170,982)	(354,203)	(1,694,303)	(628,662)

The 150 mph concept is therefore not considered practicable and a 120 mph maximum is used as the practical speed level attainable.

Data furnished by the Seaboard Coast Line Railroad based on the physical characteristics of the railroad indicate a 120 mph maximum can be attained, subject to curve and municipal restrictions, between Orlando-Auburndale, and Sebring-West Palm Beach. For purpose of this report no upgrading of track speed or facilities is contemplated between West Palm Beach and Miami due to the urban congestion and related public grade crossing problem.

Another assumption made in the capital cost estimation is that the requirement for automatic train stop for passenger trains operating in excess of 79 mph would be waived by the Interstate Commerce Commission if the signal system is modified by addition of a fourth aspect indication to provide the train separatio necessary for safe braking distance.

For example, the magnitude of automatic train stop cost using an order of magnitude cost of $15,000 per train mile, for installation of the automatic train stop on top of the existing C.T.C. system, would be:

Entire route	(269)	(15,000)	=$4,035,000
Kissimmee-Auburndale	(32.3)	(15,000)	=$484,500
Sebring-West Palm Beach	(102.6)	(15,000)	=$1,534,00

For the level of train service contemplated these costs are prohibitive. Indications have been received from the Federal Railroad Administration that favorable

consideration would be given to the waiver of ATS if the signal modification work is done. Reduction in schedule time from higher sustained speed is the product purchased with Category(2) capital expenditures. A number of alternatives are available as follows:

A. 1. No capital expenditures

2. Maximum speed 79 mph over entire route with existing curvature and municipal restrictions

B. Same as A, except automation of Auburndale connection.

C. Same as B, except grade crossing protection in thirteen cities having municipal restrictions permitting 79 mph through these cities

D. 1. Maximum speed 120 mph in following locations

(a) Kissimmee-Auburndale

(b) Sebring-West Palm Beach

(c) 79 mph balance of route

2. Grade crossing protection in thirteen cities having municipal restrictions

3. Complete grade crossing protection in 120 mph areas

4. Fourth aspect signal changes in 120 mph areas

5. No automatic train stop

6. Auburndale connection automated

7. Private crossing in 120 mph areas gated and locked

E. Same as D, except existing 79 mph speed between Kissimmee-Auburndale

F. Same as D but including 100% grade crossing protection on the entire route except private crossings which are gated and locked

Equipment Costs

TurboTrains 2 each 4 car trains, outright purchase price of $4,150,000; lease $100,000 per month and with an option to buy at the end of the second year for $1,900.000. AMTRAK's proposal to Florida Department of Transportation is based on a one year use of the two trains for $1,200,000.

The trains originally were manufactured in 1967 and would come to Florida refurbished in a like new condition for the price quoted above.

In late 1974 it is anticipated new multiple unit self-propelled cars with a configuration similar to the Metroliners will be available and these would logically take the place of the TurboTrains due to the excessive maintenance cost of TurboTrain equipment. Under these circumstance and in the interest of keeping initial starting costs as low as possible the $1,200,000 per year equipment lease would be the most favorable equipment investment.

Conventional Equipment

To be purchased under terms of the AMTRAK contract and placed in the AMTRAK equipment repair and maintenance pool.

The equipment is estimated to cost:

Locomotives-Diesel Electric	3	ea @	$100,000	$300,000
Coaches	10	ea @	20,000	200,000
				$500,000
plus refurbishment and overhaul				
Locomotives	3	@	$25,000	75,000
Coaches	10	@	30,000	300,000
				$375,000
Total Equipment Costs				$875,000

Capital costs for alternatives A through F are outlined in Table II, page 24.

TABLE II CATEGORY 2 -- CAPITAL COST ALTERNATIVES

	A		B		C		D		E		F	
	COST	SCHEDULE TIME SAVED	COST	SCHEDULE TIME SAVED	COST	SCHEDULE TIME SAVED	COST	SCHEDULE TIME SAVED	COST	SCHEDULE TIME SAVED	COST	SCHEDULE TIME SAVED
1. Interlock Existing Auburndale Hand-Thrown Connection	--	---	125,000	17 min	125,000	17 min	125,000	17 min	125,000	17 min	125,000	17 min
2. Grade Crossing Protection												
a. Entire Route	--	---	--	---	--	---	--	---	--	---	3,690,000	20 min
b. Restricted Cities	--	---	--	---	1,222,000	20 min	231,000	20 min	905,000	20 min	--	---
c. 120 mph Territory	--	---	--	---	--	---	1,867,000		950,000		--	---
3. Signal Modifications for 120 mph												
a. Kissimmee/Auburndale	--	---	--	---	--	---	12,000	13 min	--	---	12,000	13 min
b. Sebring/W.Palm Beach	--	---	--	---	--	---	80,000	29 min	80,000	29 min	80,000	29 min
4. Increased Track Maintenance												
a. Kissimmee/Auburndale	--	---	--	---	--	---	45,220	---	--	---	45,220	---
b. Sebring/W. Palm Beach	--	---	--	---	--	---	143,640	---	143,640	---	143,640	---
TOTALS	--	---	125,000	17 min	1,347,000	37 min	2,503,860	1h19min	2,203,640	1h06min	4,095,860	1h19min
COST/MINUTE				7,353		36,405		31,694		33,388		51,846

CATEGORY 1 -- CAPITAL COSTS

1. TurboTrain Spare Parts	750,000
2. Kissimmee Station Rehabilitation	217,358
3. New Station, Auburndale	250,000
	1,217,358

Discussion

The revenues indicated are predicted on a market analysis done by transportation consultant Carl R. Englund for the Florida Department of Transportation in which he forecasts a potential rail average usage of 175 to 200 passengers per train for a three round trip level of service. For the purpose of revenue calculations for this report the following adjustments were made to this ridership.

	2 round trips	3 round trips
TurboTrains	198	175
Conventional	150	125

The conventional train is estimated to attract a lower ridership than the TurboTrains from a comfort or amenites of the train standpoint as well as the speed or elapsed time factor. Conservatively 175 passengers per train were used for the three round trip TurboTrain service which provides the most convenient and attractive service and hence logically would produce the maximum ridership. The TurboTrain available, as mentioned elsewhere in the report, is the four car train with a 198 maximum seating capacity. This, based on the ridership forecast of 175 to 200 does not leave room for a marked increase in ridership and introduces the same undesirable restriction as the TurboTrain operation experienced between Boston and New York i.e. the train filled to capacity with potential new riders unable to get reservations. This problem has been solved in New York by introduction of a five car train and this solution would be desirable in the proposed Florida operation.

Four cents per passenger train mile is used in the revenue calculations. This is considered on the low side when compared with

five to six cents per mile rail fares charged in the other areas of the country, however to be competitive with the existing bus fares four cents is considered the maximum which can be charged, for example; the existing fare structure of the various modes follows:

Miami-Orlando (Coach)

Mode	One Way	Round Trip
Rail	$ 8.11	$ 14.60
Bus	10.15	19.30
Air - Day	24.00	48.00
Late Night	19.00	38.00

or on a per mile basis

Rail	3.02 ¢ per mile
Bus	4.28 ¢ per mile
Air	10.13 ¢ per mile by day
	8.02 ¢ per mile by night

The proposed rail fare one way would be $10.75 plus a 50¢ bus fare. The rail service is severely handicapped in that it is 32 miles longer than the bus route plus requires a transfer by bus to and from Walt Disney World.

Conclusions

To reduce the schedule time of passenger train operation from 5 h 13 m to 4 h between Miami and Orlando, alternative E, using TurboTrains operating at 120 mph between Sebring and West Palm Beach is the minimum requirement. Capital costs to implement this alternative are:

Interlock existing Auburndale Connection	$ 125,000
Grade crossing protection	1,855,000
Signal modifications	80,000
Track maintenance	143,640
Turbo spare parts	750,000
Kissimmee Station rehabilitation	217,358
	$3,170,998

Operating costs per year for the optimum service of three round trips per day are $6,566,561 with a revenue projection of $4,016,370 for a net operating deficit of $2,540,185 per year.

A break even operation requires patronage of 1,710 passenger - per day instead of the predicted 1,050.

If the cost of leased TurboTrains of $1,200,000 and their spare parts investment cost of $750,000 are removed from the operating and capital figures respectively the yearly operating deficit decreases to $1,340,185 and the initial capital required to $2,420,998.

FRA or AMTRAK would have to furnish the equipment at no cost to the project for these reductions to be made.

APPENDIX

Alternate C using conventional equipment has a lower operating and capital cost and merits consideration for the following reasons.

The existing minimum schedule of 5 h 25 m reduces to 5 h 13 m with the elimination of 4 existing three minute stops. By reducing the four remaining three minute stops to two minutes the time can be cut to 5 h 9 m.

A capital expenditure of $125,000 for automation of the Auburndale connection gains 17 minutes or a schedule down to 4 h 52 m.

A capital expenditure of $1,222,000 as part of the Department of Transportation grade crossing safety program, if necessary over a five year period, to provide complete protection in the 13 cities with grade crossing speed restriction would gain another 20 minutes or a Miami to Orlando time of 4 h 32 m. Miami to Kissimmee would be 4 h 9 m with an additional 30 minute bus trip to Walt Disney World.

The operating deficit for two round trip conventional train service would be $531,039 per year and $942,522 for three round trips.

Alternate C using conventional equipment provides the least cost for testing the actual ridership additional rail service would receive and also for demonstrating what the potential is for increasing the train ridership. A "fun train" approach to Walt Disney World would have to be sold in the market and the best possible conventional equipment provided. Schedules would have to be maintained without fail and the on board train service would have to be excellent for conventional equipment to be successful.

EXHIBIT I

TRACK CURVATURE AND SPEED*

Mile Post Limits	Degree of Curvature	Existing Superelevation	Speed mph		
			Conventional	TurboTrain	
790.6-790.7	6°00'L	1-1/2	25	45	C
792.2-792.3	1°30'L	1/2	25	90	
793.9-794.0	0°22'L	1	79	150	C
795.9-796.2	1°00'R	3	79	125	
797.3-797.6	1°00'R	3	79	125	
799.6-799.8	2°00'L	4-1/2	70	95	
802.2-802.5	2°00'R	4	65	90	
803.9-804.0	2°00'L	4	65	90	
807.6-808.1	1°12'R	1-1/2	50	105	C-D
808.4-808.5	2°00'R	2-1/2	50	85	C
812.3-812.6	2°00'R	4	65	90	
814.0-814.3	1°00'R	3	79	125	
816.0-816.8	1°00'L	3	79	125	
817.6-818.9	0°30'L	1-1/2	79	150	
820.0-820.3	0°20'L	1	79	150	
823.5-823.7	1°00'L	3	79	125	
825.4-825.5	2°00'R	4	65	90	C
826.2-826.7	1°00'L	3	79	125	C
827.7-827.9	2°00'R	4	65	90	
829.4-830.0	2°45'R	3	50	75	C
831.3-831.6	2°00'L	4-1/2	70	95	
834.3-834.4	1°00'L	3	79	125	C
837.2-837.3	2°45'L	6	65	85	C
838.1-838.4	3°00'L	5-1/2	60	80	C
840.8-821.3	10°-8°L	0	15	15	
823.2-823.6	2°00'L	6	79	100	
825.7-825.8	2°00'R	1	30	55	
825.9-826.3	4°00'R	1-1/2	30	55	
826.7-827.1	2°00'L	6	79	100	
827.2-827.3	0°45'L	2	79	135	
835.4-835.5	2°30'R	5	65	85	
836.1-836.4	2°05'R	4	65	90	
841.0-841.3	2°00'L	5	75	95	
846.3-846.6	0°45'L	2-1/2	79	140	
848.6-848.9	1°35'R	4-1/2	79	105	
851.0-851.2	0°55'L	3	79	130	
855.7-855.9	1°10'L	3-1/2	79	120	
856.4-856.8	2°05'R	6	79	95	
857.1-857.2	0°40'L	2	79	145	
858.3-858.6	2°50'L	2-1/2	45	70	C
858.7-858.8	2°00'R	2	45	80	C
859.0-859.2	2°15'R	6	75	95	
859.2-859.3	1°55'R	5	75	95	
859.5-859.9	2°00'L	5	75	95	
860.4-860.7	2°00'L	5	75	95	
860.9-861.2	2°00'R	5	75	95	
862.5-862.9	2°05'L	5-1/2	75	95	
863.5-863.7	0°35'R	1-1/2	75	95	

EXHIBIT I (continued)

Mile Post Limits	Degree of Curvature	Existing Superelevation	Speed mph Conventional	Speed mph TurboTrain	
864.3-864.9	2°10'R	6	75	95	
865.6-865.8	1°30'L	4	75	95	
866.0-866.3	2°00'R	4-1/2	70	95	
866.6-866.9	2°30'L	6	70	90	
867.4-868.0	3°10'L	6	60	80	C
868.7-868.9	0°35'R	2	79	150	C
872.4-872.6	1°05'R	3	79	120	
874.5-874.8	1°00'R	3	79	125	
906.1-906.7	1°00'L	3	79	125	C
909.3-909.7	2°00'R	6	79	100	C
967.0-967.5	2°05'R	5	75	95	C
968.4-968.6	0°40'L	1-1/2	75	140	C
969.6-969.8	2°00'R	1-1/2	40	80	C
969.8-969.9	6°30'R	1	20	40	C-D
969.9-970.0	6°30'L	1	20	40	C
970.0-970.1	5°45'L	1	20	40	C
970.1-970.2	3°20'R	1/2	20	40	C
970.4-970.5	4°00'L	3	40	60	C
970.6-970.7	4°00'R	3	40	60	C
970.7-971.1	2°35'R	2	40	75	C
971.4-971.8	2°50'L	2	40	70	C
972.4-972.6	0°35'R	1-1/2	79	150	C
973.5-974.0	0°50'L	2-1/2	79	135	C
974.3-974.6	3°00'R	3	45	70	C
974.7-975.0	3°00'L	3	45	70	
975.7-975.9	1°00'R	3	79	125	
976.2-976.3	0°50'L	2-1/2	79	135	C
977.0-977.8	0°10'L	1/2	79	150	
981.2-981.3	1°50'R	3	79	95	
982.2-982.4	2°10'L	6	75	95	C
983.6-983.9	2°00'R	6	79	100	C
987.2-987.4	2°00'L	4-1/2	70	95	C
991.5-992.1	1°45'R	5	79	105	C
994.2-994.8	1°40'L	5	79	105	C
997.7-998.1	1°00'R	3	79	125	
1000.1-1000.3	0°30'L	1-1/2	79	150	
1007.7-1007.9	1°00'R	3	79	125	
1010.3-1010.6	1°45'L	5	79	105	C-D
1015.0-1015.3	1°00'L	3	79	125	C
1015.9-1016.2	1°45'R	3	79	105	
1017.7-1017.9	1°05'L	3	79	120	
1020.3-1020.4	0°05'L	1/2	79	150	C
1022.9-1023.5	2°00'R	6	79	100	
1024.0-1024.1	1°00'L	3	79	125	
1028.3-1028.4	2°10'R	6	75	95	
1030.2-1030.9	2°00'L	5	75	95	
1033.2-1033.2	0°10'L	1/2	79	150	
1036.5-1036.9	6°00'L	1	20	45	
1037.5-1037.7	6°00'L	1	20	45	

EXHIBIT I (continued)

Mile Post Limits	Degree of Curvature	Existing Superelevation	Speed mph	
			Conventional	TurboTrain
1038.0-1038.1	6°00'L	1	20	45
1038.7-1038.8	3°00'R	1/2	20	60
1039.0-1039.1	1°30'L	1/2	20	90
1039.1-1039.2	1°30'L	1/2	20	90

NOTE: C - Further restricted by City Ordinance
D - Station Stop

*From Seaboard Coast Line Railroad

EXHIBIT II.
AUTOMATIC SIGNAL SPACING
SEABOARD COAST LINE RAILROAD
ORLANDO-MIAMI

*Add 4th Aspect One Direction.
⊛Add 4th Aspect Both Directions.

BLOCK	MAX. SPEED PER MECH. DEPT. CHART		DISTANCE	ADD 4TH ASPECT	MAXIMUM SPEED PER SIGNAL SPACING
ORLANDO - S. ORLANDO			3,500'		88 MPH
S. ORLANDO - SIGNAL 7943			9,500'		134 MPH
SIGNAL 7943 - SIGNAL 7959			9,000'		132 MPH
SIGNAL 7959 - N. TAFT			9,000'		132 MPH
N. TAFT - S. TAFT			7,500'		126 MPH
S. TAFT - SIGNAL 8009			9,800'		135 MPH
SIGNAL 8009 - SIGNAL 8033			12,000'		140 MPH
SIGNAL 8033 - SIGNAL 8053			10,800'		137 MPH
SIGNAL 8053 - SIGNAL 8073	S	N	10,000'		135 MPH
SIGNAL 8073 - N. KISSIMMEE (809.17)	40	60	10,000'		135 MPH
N. KISSIMMEE (809.17) - S. KISSIMMEE (810.85)	87	115	8,800'		131 MPH
S. KISSIMMEE (810.85) - SIGNAL 8127	110	110	9,800'		135 MPH
SIGNAL 8127 - N. REEDER (814.53)	110	133	9,800'		135 MPH
N. REEDER (814.53) - S. REEDER (815.90)	120	133	6,800'		122 MPH
S. REEDER (815.90) - SIGNAL 8177	125	130×	10,500'	* NORTH	137 MPH
SIGNAL 8177 - SIGNAL 8203	×139	130	13,600'	* SOUTH	144 MPH
SIGNAL 8203 - DAVENPORT HOLDOUT (822.46)	×142	120	10,800'	* SOUTH	137 MPH
DAVENPORT HOLDOUT (822.46) - N. DAVENPORT (824.38)	140	100	10,300'		136 MPH
N. DAVENPORT (824.38) - S. DAVENPORT (825.34)	60	60	4,600'		100 MPH
S. DAVENPORT (825.34) - N. HAINES CITY (827.95)	98	98	14,300'		146 MPH
N. HAINES CITY (827.95) - S. HAINES CITY (829.30)	99	65	6,300'		106 MPH
S. HAINES CITY (829.30) - SIGNAL 8313	59	55	11,100'		138 MPH
SIGNAL 8313 - SIGNAL 8333	100	115	11,100'		138 MPH
SIGNAL 8333 - N. LAKE ALFRED (835.23)	×115	100	10,000'	* SOUTH	135 MPH
N. LAKE ALFRED (835.23) - S. LAKE ALFRED (836.10)	115	80	4,300'		97 MPH
S. LAKE ALFRED (836.10) - SIGNAL 8375	58	80	7,700'		128 MPH
SIGNAL 8375 - N. AUBURNDALE (839.15)	90	90	8,800'		131 MPH
N. AUBURNDALE (839.15) - S. AUBURNDALE (840.23)	98	85	5,100'		105 MPH
S. AUBURNDALE (840.23) - AUBURNDALE CONNECTION (840.87)			4,000'		94 MPH
AUBURNDALE CONNECTION (S 820.71) - S. AUBURNDALE (S 821.06)			7,300'		125 MPH

EXHIBIT 1F (Continued)
AUTOMATIC SIGNAL SPACING
SEABOARD COAST LINE RAILROAD
ORLANDO-MIAMI

*Add 4th Aspect One Direction.
⊛Add 4th Aspect Both Directions.

BLOCK	MAX. SPEED PER MECH. DEPT. CHART		DISTANCE	ADD 4TH ASPECT	MAXIMUM SPEED PER SIGNAL SPACE
SIGNAL 8237 - N. WINTER HAVEN			13,300'		143 MPH
N. WINTER HAVEN - S. WINTER HAVEN			7,400'		126 MPH
S. WINTER HAVEN - SIGNAL 8297			10,500'		137 MPH
SIGNAL 8297 - SIGNAL 8323			13,700'		144 MPH
SIGNAL 8323 - N. WEST LAKE WALES			11,300'		138 MPH
N. WEST LAKE WALES - CROSSOVER			4,600'		100 MPH
CROSSOVER - DOUBLE CROSSOVER			2,000'		67 MPH
DOUBLE CROSSOVER - S. WEST LAKE WALES			8,300'		133 MPH
S. WEST LAKE WALES - SIGNAL 8397			12,400'		141 MPH
SIGNAL 8397 - SIGNAL 8433			19,700'		150 MPH
SIGNAL 8433 - N. WEST FROSTPROOF			12,900'		142 MPH
N. WEST FROSTPROOF - S. WEST FROSTPROOF			7,800'		128 MPH
S. WEST FROSTPROOF - SIGNAL 8495			12,300'		141 MPH
SIGNAL 8495 - SIGNAL 8545			24,700'		150 MPH
SIGNAL 8545 - N. AVON PARK			12,300'		141 MPH
N. AVON PARK - S. AVON PARK			4,400'		99 MPH
S. AVON PARK - N. HARTT			20,700'		150 MPH
N. HARTT - S. HARTT			7,600'		127 MPH
S. HARTT - SIGNAL 8653			11,400'		139 MPH
SIGNAL 8653 - SIGNAL 8675	S	N	12,000'		140 MPH
SIGNAL 8675 - N. RIDGE (869.74)	98	135	11,800'		139 MPH
N. RIDGE (869.74) - S. RIDGE (871.24)	105	130	7,600'		127 MPH
S. RIDGE (871.24) - SIGNAL 8737	125	130*	12,400'	* North	141 MPH
SIGNAL 8737 - SIGNAL 8779	*140	150	22,800'	* South	150 MPH
SIGNAL 8779 - SIGNAL 8807	*150	150	15,700'	* South	148 MPH
SIGNAL 8807 - N. PLAINS (883.17)	*150	150*	12,200'	⊛	141 MPH
N. PLAINS (883.17) - S. PLAINS (885.02)	*150	150*	9,200'	⊛	133 MPH
S. PLAINS (885.02) - SIGNAL 8871	*150	150*	12,400'	⊛	141 MPH
SIGNAL 8871 - SIGNAL 8891	*150	150*	9,800'	⊛	135 MPH
SIGNAL 8891 - N. FT. BASINGER (891.59)	*150	150*	13,200'	⊛	143 MPH
N. FT. BASINGER (891.59) - S. FT. BASINGER (893.14)	*150	150*	7,700'	⊛	130 MPH

AUTOMATIC SIGNAL SPACING
SEABOARD COAST LINE RAILROAD
ORLANDO-MIAMI

One Direction.
*Add 4th Aspect Both Directions.

BLOCK	MAX. SPEED PER MECH. DEPT. CHART		DISTANCE	ADD 4TH ASPECT	MAXIMUM SPEED PER SIGNAL SPACIN
S. FT. (893.14) SINGER - SIGNAL 8953	150	150	12,100'	*North	140 MPH
SIGNAL 8953 - SIGNAL 8987	x 150	150 x	19,600'	*	150 MPH
SIGNAL 8987 - N. (901.14) MILDRED	x 150	140	11,700'	* South	139 MPH
N. (901.14) MILDRED - S. (902.62) MILDRED	x 150	125 x	7,600'	*	127 MPH
S. (902.62) MILDRED - SIGNAL 9051	x 150	120	13,700'	* South	144 MPH
SIGNAL 9051 - N. (907.44) OKEECHOBEE	150	110	11,800'		140 MPH
N. (907.44) OKEECHOBEE - S. (908.88) OKEECHOBEE	120	80	7,000'		123 MPH
S. (908.88) OKEECHOBEE - SIGNAL 9111	80	110	12,400'		141 MPH
SIGNAL 9111 - N. (913.34) SHERMAN	120	150	11,800'		140 MPH
N. (913.34) SHERMAN - S. (914.89) SHERMAN	120	150 x	7,700'	* North	128 MPH
S. (914.89) SHERMAN - SIGNAL 9171	130	150 x	12,400'	* North	141 MPH
SIGNAL 9171 - SIGNAL 9199	x 145	150 x	14,800'	*	146 MPH
SIGNAL 9199 - SIGNAL 9221	x 150	150 x	11,500'	*	139 MPH
SIGNAL 9221 - N. (924.25) ZANA	x 150	150 x	11,000'	*	139 MPH
N. (924.25) ZANA - S. (926.15) ZANA	x 150	150 x	9,700'	*	134 MPH
S. (926.15) ZANA - SIGNAL 9283	150	145 x	12,500'	* South	141 MPH
SIGNAL 9283 - SIGNAL 9323	x 150	140 x	20,400'	*	150 MPH
SIGNAL 9323 - N. (934.50) INDIAN TOWN	x 150	120	11,400'	* South	139 MPH
N. (934.50) INDIANTOWN - S. (936.43) INDIANTOWN	150	100	9,800'		135 MPH
S. (936.43) INDIANTOWN - (939.91) YALE	105	150	16,400'		149 MPH
(939.91) YALE - SIGNAL 9431	x 125	150 x	17,300'	*	150 MPH
SIGNAL 9431 - SIGNAL 9453	x 140	150	11,500'	* South	139 MPH
SIGNAL 9453 - N. (947.57) UNITED	x 145	150 x	11,900'	*	140 MPH
N. (947.57) UNITED - S. (949.04) UNITED	150	150 x	7,300'	* North	125 MPH
S. 949.04 UNITED - N. (954.93) DELTA	x 150	150 x	31,500'	*	150 MPH
N. (954.93) DELTA - S. (956.38) DELTA	150	145	7,300'		125 MPH
S. (956.38) DELTA - N. (963.23) DYER	x 150	145 x	35,000'	*	150 MPH
N. (963.23) DYER - S. (964.15) DYER	x 150	115	4,400'	* South	99 MPH
S. (964.15) DYER - N. (966.93) NORTHWOOD	150	105 x	15,500'	* North	148 MPH
N. (966.93) NORTHWOOD - S. (968.63) NORTHWOOD	40	40	8,300'		130 MPH
S. (968.63) N. (969.67)			6,000'		115 MPH

EXHIBIT II (Continued)
AUTOMATIC SIGNAL SPACING
SEABOARD COAST LINE RAILROAD
ORLANDO-MIAMI

BLOCK		DISTANCE		MAXIMUM SPEED PER SIGNAL SPACE
N. W. PALM BCH. - S. W. PALM BCH.		2,800'		79 MPH
S. W. PALM BCH. - N. LAKE WORTH		26,200'		150 MPH
N. LAKE WORTH - S. LAKE WORTH		7,800'		128 MPH
S. LAKE WORTH - N. BOYNTON BCH.		32,200'		150 MPH
N. BOYNTON BCH. - S. BOYNTON BCH.		8,100'		130 MPH
S. BOYNTON BCH. - N. DELRAY BCH.		12,300'		141 MPH
N. DELRAY BCH. - N. YAMATO		20,900'		150 MPH
N. YAMATO - S. YAMATO		8,200'		130 MPH
S. YAMATO - SIGNAL 9941		10,800'		137 MPH
SIGNAL 9941 - SIGNAL 9963		11,400'		138 MPH
SIGNAL 9963 - N DEERFIELD BCH.		11,900'		138 MPH
N. DEERFIELD BCH - S. DEERFIELD BCH		5,200'		106 MPH
S. DEERFIELD BCH. - N. POMPANO		21,200'		150 MPH
N. POMPANO - CROSSOVER		5,000'		105 MPH
CROSSOVER - S. POMPANO		8,400'		130 MPH
S. POMPANO - N. CARMEN		21,400'		150 MPH
N. CARMEN - S. CARMEN		8,000'		130 MPH
S. CARMEN - PORT EVERGLADES		16,500'		149 MPH
PORT EVERGLADES - N. DANIA		8,200'		130 MPH
N. DANIA - S. DANIA		4,900'		104 MPH
S. DANIA - N. HOLLYWOOD		11,700'		140 MPH
N. HOLLYWOOD - S. HOLLYWOOD		2,300'		70 MPH
S. HOLLYWOOD - N. MIAMI PLANTATION		26,300'		150 MPH
N. MIAMI PLANTATION - S. MIAMI PLANTATION		10,300'		136 MPH
S. MIAMI PLANTAION - N. OPA LOCKA		18,500'		150 MPH
N. OPA LOCKA - N. HIALEAH YARD		7,100'		124 MPH
N. HIALEAH YARD - S. HIALEAH YARD		13,300'		143 MPH
S. HIALEAH YARD - N. TWO TRACKS		1,400'		58 MPH
N. TWO TRACKS - HIALEAH STATION		11,000'		138 MPH